
Atlantic Billfish Fishery Management Plan Amendment

Chapter 5
REGULATORY IMPACT REVIEW AND
FINAL REGULATORY FLEXIBILITY ANALYSIS

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5.1 Background

An integral part of an FMP or FMP amendment is an analysis of the economic effects of the various management alternatives. This economic analysis is critical to enable identification of management measures that minimize economic impacts, while meeting overall management goals of the FMP or FMP amendment. The analyses presented in this section of the Atlantic billfish FMP amendment assesses the economic impacts of the final actions in general, and specifically on small businesses, in order to meet requirements of E.O. 12866 and the Regulatory Flexibility Act (RFA). However, prior to presenting these analyses, it is important to clarify the difference between two types of economic measures: net economic benefit and economic impact. While the Magnuson-Stevens Act makes reference to net national economic benefits and costs, the analyses required under NOAA's guidelines for the RFA include economic impact analyses, such as impacts on gross revenues and/or costs. Both are important measures of the effects of management, however, they are different. Misuse of these two measures often leads to inappropriate comparisons of the "values" of various fisheries and/or fishery user groups. The Regulatory Impact Review (RIR) is presented in Section 5.5, and the Final Regulatory Flexibility Analysis (FRFA) in Section 5.6.

The Atlantic billfish FMP was implemented in 1988 and since that time there has been few changes to the regulations guiding recreational or commercial fisheries interactions with these species. Therefore, it was not until March 24, 1998, with the publication of an interim rule to increase the minimum size for Atlantic blue and white marlin for a period of 180 days (63 FR 14030), that there was a need for an economic assessment of the various components of this fishery. The interim rule included an RIR and a request for comments on the use of this management strategy to comply with the 1997 ICCAT recommendation to reduce landings by at least 25 percent from 1996 levels, starting in 1998, and to be completed by 1999. No comments were received on the March interim rule, which was subsequently extended for an additional 180 days on September 29, 1998, (63 FR 51859). The second interim rule included provisions to further increase the minimum size limit for Atlantic blue marlin, and to establish a retention limit of one marlin (Atlantic blue or white marlin) per vessel per day within the U.S. EEZ. The extended interim rule also provided the AA authority to reduce the retention limit to zero if landing limits for Atlantic blue marlin and white marlin are reached (26.2 mt and 2.48 mt, respectively), as determined by the most recent tournament and other landings data. The intention of limiting retention of Atlantic marlin was to insure compliance with ICCAT landing limits established as a result of the 1997 recommendation.

At nearly the same time that the second interim rule was announced, the NOA for the draft Atlantic billfish FMP amendment was published (October 9, 1998; 63 FR 51859). The draft FMP amendment also included a one billfish per vessel per trip preferred management measure, with a provision to reduce to a zero limit with three-day notice. NMFS subsequently received comments regarding the provision in the interim rule that a zero bag limit could have a more significant economic impact on communities than reported in either the RIR for the interim rule or in the RIR included in the draft FMP amendment, particularly in relation to billfish tournaments. The comments indicated that tournaments could be canceled, or at least experience

significant reduction in participation, due solely to the *possibility* of a prohibition of landing of any fish. On November 13, 1998, NMFS published a technical amendment (63 FR 63421) amending the September 29, 1998 interim rule provision allowing the adjustment to the retention limit by the AA, including a zero retention limit.

NMFS released an amended RIR, as well as an Initial Regulatory Flexibility Analysis (IRFA) on January 20, 1999. The draft FMP amendment did not include an IRFA because the RIR analysis concluded that the cumulative impacts of the preferred alternatives were not expected to have a significant impact on a substantial number of small entities. The revised RIR/IRFA document also provided alternative mechanisms to minimize economic impacts associated with ensuring compliance with 1997 ICCAT-recommended landing levels. However, the draft FMP amendment retained the adjustable retention limit preferred management measure to obtain further comments on the effectiveness of this mechanism to ensure compliance with ICCAT-recommended landing levels. NMFS published the proposed rule (64 FR 3154) on January 20, 1999, to implement the draft Atlantic billfish FMP amendment and HMS FMP. Comments on the proposed rule were received through March 12, 1999, including 27 public hearings and an Atlantic Billfish AP meeting. Many additional written and verbal comments were received in regard to negative economic effects of a potential zero retention limit. A number of other issues were raised during the comment period, noting that other preferred management measures would have a greater economic impact than anticipated in previous economic assessments, particularly in relation to the mandatory observer program on the charterboat industry, and prohibiting multiple hooks in lures. The IRFA provides a full discussion of all comments on the IRFA, as well as the steps taken by NMFS to minimize economic impacts in the final FMP amendment. The RIR considers the net economic impacts of all final actions and rejected options on a wider scope.

5.1.1 Net Economic Benefit

The net economic benefit is the difference between benefits and costs. In examining alternatives, these are often considered at the margin, i.e., the change in net benefits in moving from the status quo to another alternative. Net economic benefit is the only true measure of the “value” of a fishery. Note that net economic benefit considers employment as a cost; thus, all other things being equal, the more employment generated under an alternative, the lower the net economic benefit.

Net economic benefit in the recreational fishery is primarily angler consumer surplus (ACS), which is the willingness of anglers to pay for their recreational fishing opportunities over and above the actual costs they incur. ACS is measured through various techniques, all of which require survey data and considerable analyses. Travel cost models and contingent valuation techniques are the most common methods for estimating net economic benefit. Net economic benefit from the recreational fishery also includes producer surplus generated by charter/headboats, along with the ACS of their clientele. Charterboat producer surplus is estimated as the difference between charterboat fee revenues and the costs of operating the

vessel. Due to the need to collect primary data through a survey and the need to have highly specialized analyses of these data, knowledge of ACS for HMS fisheries is severely limited.

HMS and other marine species provide additional values beyond those resulting from fishing activities. Conservationists who value the survival of a particular fish species without regard to fishing or other interaction with that species also benefit from the fishery; this kind of consumer surplus is referred to as “existence value.” “Non-consumptive use values” are a second type of non-fishing benefit provided by marine animals; as the term implies, this class of benefits refers to benefits derived from using animals in a way that does not consume them. Non-consumptive uses can be important in a commercial sense, to the extent that they can generate net economic benefits such as whale watching, snorkeling, etc.¹ Like ACS, the net economic benefit associated with non-consumptive uses is the value placed on them over and above the actual costs incurred in pursuing them. Estimates of existence value are particularly important for protected species, such as marine mammals. The Marine Mammal Protection Act (MMPA) contains an underlying assumption that existence and non-consumptive use values exceed the net economic benefit from a commercial or recreational fishery for these species. In other words, society places a higher value on existence values and non-consumptive use of these species than on consumptive uses.

The primary focus in the economic assessments used for the 1988 Atlantic Billfish FMP was on anglers’ expenditures as a measure of the economic impacts of the recreational fishery (Ditton 1994). The net economic value of a recreational activity is also measured in terms of the net value of the activity to the participants over and above costs, which is its value to the nation. Economic impact is not same as the economic value, because if recreationists cannot spend their money on a particular recreational activity, that money will be spent in another sector. However, in the case of forgone recreational fishing activity, while the nation as a whole might not suffer economic loss, the coastal communities and businesses frequented by saltwater anglers may be negatively impacted by decreased fishing activity. Billfish fishing is generally favored by persons with personal incomes that are far above the average U.S. per capita income (Ditton 1996), which means that these anglers can afford to take their fishing activities to other countries, potentially decreasing the benefit of saltwater angling to the United States, including the economic impact.

5.1.2 Economic Impact

There are two types of economic statistics that are used in evaluating the economic importance of a fishery, and it is necessary to distinguish between the two types to avoid abuse of the term “economic importance.” The first type of statistic is economic impact, which often interests both commercial and recreational fishermen, referring to the money generated by their activity. Economic impact is the effect on expenditures of the various management measures. In

¹To the extent that catch-and-release fishing does not result in mortality of the fish released, it may also be considered a non-consumptive use.

the commercial fishery, economic impact includes expenditures (bait, tackle, labor, etc.) and/or ex-vessel value of commercial landings plus value-added. In the recreational fishery, economic impact is the money spent by anglers, including charterboat fees, bait, fuel and tackle, travel (lodging, gas, hotels, restaurants, etc.). Non-consumptive uses such as whale watching can have similar economic impacts, such as expenditures on boat fees and travel (lodging, gas, hotels, restaurants, etc.)

The relative levels of economic impact allow cross-comparison of the effect of the measures on the level of expenditures -- primarily fishing costs -- from both the recreational and commercial fisheries. Expenditures may be examined in the format of an input-output model, which traces the “ripple” effect of every dollar of expenditures in one sector on other sectors, often referred to as secondary, or induced, effects. Expenditures can also be used to estimate the number of jobs generated by various management measures. Economic impacts are very important to local communities, as employment levels, income and a wider tax base are desirable effects of fishery management measures.

5.1.3 Common Misconceptions

The most common error made in citing economic figures from a fishery is the comparison of recreational angler expenditures to ex-vessel sales of commercial fish. During the public comment period for the proposed rule, this response was received from recreational anglers and organizations. A more appropriate approach would be a comparison of expenditures in each sector, along with “value-added” estimates. In any case, neither statistic is an indicator of the net economic benefit of the fishery, which is the true “value”; i.e., benefits over and above costs. The paradox of net economic benefit and economic impact measures is that they do not always point in the same direction. For example, higher costs increase economic impact but decrease economic benefit, all other things being equal. Thus, a measure that increases fishing expenditures can increase the economic impact while reducing net economic benefit. Similarly, a measure that increases employment actually can decrease net economic benefit—since a job is a cost—while increasing economic impact. While employment levels, personal income, and tax revenues from fishing expenditures are very important on a regional and local basis (see Chapter 7 for discussion of communities), they are not equivalent to national net economic benefit. It is important to keep these distinctions in mind when examining the economic analyses that follow.

5.1.4 RIR versus RFA

The focus of the RIR is on the net economic benefit from the fishery, although economic impacts are also considered. In a Regulatory Flexibility Analysis, the focus is on small businesses and the effect of regulatory measures on their revenues and/or costs. While the NOAA guidelines for the RFA focus primarily on impacts on either revenues and/or costs (depending upon the measure being considered as well as available data), the financial condition of affected firms (i.e., the net effect of revenue and cost changes) is also an important cornerstone to these analyses.

The requirements under E.O. 12866 and RFA are similar. Both require a description of the need for the action, the management objectives, and a description of the expected economic impacts. The RIR and RFA also require an analysis of each alternative and the expected effects. A final regulatory flexible analysis requires a summary of the issues raised during the public comment period, a description of the entities to which the rule will apply, a description of the compliance or paperwork requirements, and a description of the steps taken to minimize the economic impacts. The focus of the FRFA is on small entities, while the RIR focuses on impacts from a wider scope. Both require a description of the reasons why an action is being taken and the management objectives. Section 5.5 contains the RIR, while Section 5.6 contains the FRFA, including a description of the small entities which may be impacted, a summary of the significant issues raised by the public comments in response to the IRFA, a summary of the assessment of the agency of such issues, and a statement of any changes made in the proposed rule as a result of such comments.

5.2 Purpose and Need

Atlantic billfish management strategies in the United States are guided by international (ICCAT) and national mechanisms (the Magnuson-Stevens Act and the Atlantic Billfish FMP). Two recent actions have changed the focus of billfish management in the Atlantic by the United States. In the international arena, ICCAT made its first-ever binding recommendation for Atlantic blue and white marlin in 1997, requiring landing reductions of at least 25 percent from 1996 levels by the end of 1999. Improvements in data and monitoring were also addressed in this recommendation. On the national level, passage of the 1996 Magnuson-Stevens Act initiated fundamental changes in U.S. fishery management policy, shifting emphasis to precautionary management strategies. New provisions included requirements to halt overfishing, rebuild overfished fisheries, and to minimize bycatch and bycatch mortality, to the extent practicable. Ten national standards and guidelines to the standards describe the goals and objectives of this precautionary approach.

In September 1997, NMFS announced to Congress which HMS fishery resources were overfished. This list included Atlantic blue and white marlin, thereby triggering a suite of management requirements, including development of a rebuilding plan for overfished stocks, and reduction in bycatch and bycatch mortality. In addition, NMFS established a Billfish AP which has advised NMFS in the formation and consideration of the alternatives outlined throughout the draft Atlantic billfish FMP amendment. The final FMP amendment includes rebuilding programs for both Atlantic blue marlin and Atlantic white marlin. The rebuilding program includes status determination criteria which allow managers to determine whether overfishing is occurring or a stock is overfished. The final FMP amendment also considers precautionary management alternatives for west Atlantic sailfish and Atlantic longbill spearfish stocks. The following management problems addressed in the final FMP amendment are described in Chapter one of the final FMP amendment:

1. Overfished populations of Atlantic blue marlin and Atlantic white marlin;
2. Bycatch and discard mortality;
3. Compliance with the 1997 ICCAT recommendation to reduce Atlantic blue marlin and Atlantic white marlin;
4. Monitoring and data collection; and,
5. Status of west Atlantic sailfish and longbill spearfish populations.

5.3 Objectives

Chapter one describes the objectives of the FMP amendment and the Magnuson-Stevens Act. The overarching goal throughout this FMP amendment is to prevent overfishing and to rebuild overfished Atlantic billfish stocks as defined in the Magnuson-Stevens Act and the NSGs. Some of the Atlantic billfish FMP amendment objectives that may increase or decrease gross revenues or costs are outlined below in no particular order:

- Prevent and/or end overfishing of Atlantic billfish and adopt the precautionary approach to fishery management;
- Rebuild overfished Atlantic billfish stocks, and monitor and control all components of fishing mortality, both directed and incidental, so as to ensure the long-term sustainability of the stocks and promote Atlantic-wide stock recovery to the level where Maximum sustainable yield can be supported on a continuing basis;
- Minimize, to the extent practicable, bycatch and discard mortality;
- Provide the data necessary for assessing the fish stocks and managing the fisheries, including addressing inadequacies in collection and ongoing collection of social, economic, and bycatch data about Atlantic billfish fisheries;
- Consistent with other objectives of the amendment, to manage Atlantic billfish fisheries for the continuing optimum yield so as to provide the greatest overall benefit to the Nation, particularly with respect to recreational opportunities and taking into account the protection of marine ecosystems. Optimum yield is the maximum sustainable yield from the fishery, reduced by any relevant social, economic, or ecological factors;
- Minimize adverse social and economic effects on recreational and commercial activities to the extent practicable, consistent with ensuring achievement of the other objectives of this plan; and,
- Maximize protection of areas identified as essential fish habitat for Atlantic billfish, particularly for critical life stages.

5.4 Relevant Federal Rules which may Conflict with the Final Actions

As described in Chapter 1, HMS fishermen and managers must comply with a number of international agreements, domestic laws, and other FMPs. These include, but are not limited to the Magnuson-Stevens Act, the Atlantic Tunas Convention Act, the High Seas Fishing Compliance Act, the Marine Mammal Protection Act, the Endangered Species Act, the National Environmental Policy Act, RFA, the Paperwork Reduction Act, the Coastal Zone Management Act, and the United Nations Agreement on Straddling Fish Stocks. The final actions in this FMP amendment comply with all relevant regulations while still preventing overfishing and rebuilding the stock. When the final actions impact fishermen who fish in other U.S. fisheries, NMFS has worked with the relevant Fishery Management Councils and the states to ensure consistency among the regulations (e.g., upgrading restrictions for limited access). Thus, NMFS does not believe that any of the final actions conflict with relevant regulations, federal or otherwise.

5.5 Regulatory Impact Review

Executive Order 12866, signed in October 1993, requires agencies to take a deliberative, analytical approach to rulemaking, including assessment of the costs and benefits of proposed actions. The Department of Commerce (DOC) and NOAA require preparation of an RIR for all regulatory actions that either implement a new fishery management plan, significantly amend an existing plan, or may be significant in that they reflect important DOC/NOAA policy concerns and are of public interest. The RIR provides a comprehensive review of the changes in net economic benefits to society expected from the implementation of the final measures. The analysis also provides a review of the problems and policy objectives, and an evaluation of the major alternatives that could be used to solve problems. The purpose of the analysis is to ensure that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way.

5.5.1 Methodology and Framework for Analysis

The basic approach adopted in this RIR is an assessment of management measures from the standpoint of determining the resulting changes in costs and benefits to society. The net effects are stated in terms of economic impact and net economic benefit (sum of producer and consumer surplus) to the various components of the recreational billfish fishery. The approach taken in analyzing alternative management approaches is to describe and/or quantify the changes in short-term net benefits. A discussion of the long-term impacts is also included for each alternative.

5.5.2 Economics of the Atlantic Billfish Recreational Fishery

Fisher and Ditton (1992) completed an inventory of 359 billfish tournaments held in 1989 along the U.S. Atlantic coast, including the Gulf of Mexico, as well as Puerto Rico and the U.S. Virgin Islands. A total of 1,984 billfish anglers were surveyed, with 1,171 anglers responding. Respondents reported spending an average of \$1,601 (excluding tournament fees) for a billfish fishing trip (Table 2.1.10) that lasted an average of 2.59 days, with an average of 13 trips taken each year. The average amount spent annually on billfish tournament fees was \$1,856, or \$546 per tournament, giving a \$2,147 total expenditure per angler per trip. The total annual expenditure estimates generated from the Fisher and Ditton study indicated that in 1989, billfish tournament anglers spent an estimated \$180 million in attempting to catch billfish (tournament and non-tournament trips), giving an average equivalent expenditure of \$4,242 for each fish caught or \$32,381 for each billfish landed. Ditton (1996) reported that the annual net economic benefits for the group surveyed was over \$2 million. Fisher and Ditton estimated that there were 7,915 U.S. tournament billfish anglers, which translates to a \$262 annual consumer's surplus per billfish angler.

Ditton and Clark (1994) provided a description of the economics associated with recreational billfish anglers participating in at least one of 14 billfish tournaments held between August, 1991 and October, 1992 in Puerto Rico. A total of 885 resident (of an estimated 1,475 resident billfish participants) and 154 non-resident anglers (82 were from the mainland United

States or U.S. Virgin Islands; 72 were from other countries) were surveyed. Trip expenditures per resident averaged \$711 per trip (average of 21 trips/year) and \$3,945 for non-resident anglers fishing in Puerto Rico (average 7 billfish trips/year in Puerto Rico). Resident angler expenditures averaged \$1,963 per billfish caught, while expenditures for non-residents averaged \$2,132 per billfish caught. Ditton and Clark (1994) estimated the net economic benefits per trip at \$549, yielding total annual net economic benefits of \$18 million. Total resident and non-resident (U.S. citizens and foreign countries) angling expenditures were over \$21 million and \$4 million, respectively.

5.5.3 Economic Impacts of Final Actions and Rationale for Rejected Options

This section provides a discussion of the economic impacts of the selected final actions and rationale for why other management options were rejected from an economic standpoint. Section 5.5.5 summarizes the positive, negative and expected net economic impact for each alternative considered in the final FMP amendment included in Chapter 3. The constraints of the available economic information limits most of the following discussion to qualitative assessments.

Possession Restriction

Size Limits: Size limits are the primary mechanism utilized by the final FMP amendment to comply with 1997 ICCAT recommendation. Increasing the minimum size limits for Atlantic blue marlin to 99 inches LJFL, Atlantic white marlin to 66 inches LJFL and west Atlantic sailfish to 63 inches LJFL will result in an initial reduction in landings (by weight) of 32 percent, 42 percent, and 34 percent, respectively. However, the level of U.S. sources of Atlantic billfish mortality, with respect to Atlantic-wide levels, requires international cooperation to rebuild overfished stocks. Although landings by U.S. billfish anglers will decline, it is not likely that the economic impact (i.e., monies spent in the pursuit of billfish) or the angler consumer surplus (willingness of billfish anglers to pay for their recreational fishing opportunities over and above the actual costs they incur) will decline, either in the short term or long-term.

During the public comments, many responses were received in support of increases in size limits, and in fact many tournaments already have minimum sizes that are in excess of the final size limits (e.g., The Big Rock Tournament in North Carolina uses a 110 inch LJFL minimum size for blue marlin). Billfish anglers also release the vast majority of fish that are caught (in excess of 90 percent), therefore actions that would reduce landings due to size increases will likely not result in a decline in fishing effort and concomitant expenditures (economic impact and ACS). As stocks recover first to Maximum sustainable yield and then to Optimum yield levels, billfish will be encountered more frequently, possibly leading to an expansion of revenues associated with all components of the recreational fishery, including boat and tackle manufacturing; charterboat business; hotel, restaurants and other business in communities that support billfish angling; taxidermists; and other tourism-related businesses. The two other alternatives included in the draft FMP amendment were rejected because the final action provided the minimum economic impact, while meeting the objectives of the FMP amendment to comply with the provisions of both ATCA (implement ICCAT recommendations) and

Magnuson-Stevens Act (rebuilding overfished fisheries). The status quo alternative would not meet the requirements under either Act, and the slot limit alternative could result in landing of juveniles, which would be counter-productive to the objectives of the amendment.

Possession Limits: The draft Atlantic billfish FMP amendment included a preferred alternative establishing a bag limit of one billfish per day per vessel, with a provision giving the AA the authority to adjust the retention limit to zero if established landing caps were exceeded. Following the release of the draft Atlantic billfish FMP amendment, and the September 29, 1998 (63 FR 51859) extension of the March 23, 1998 interim rule (63 FR14030), NMFS received comments indicating that billfish tournaments could be canceled, or at least experience significant reduction in participation, solely on the *possibility* of a prohibition of landing of any fish. Although an exact estimate of the economic impact of canceling tournaments is not available, there could be economic effects expected for businesses associated with billfish tournaments on local (e.g., charters and charterboats, hotels, restaurants, car rentals, gasoline/diesel sales, and bait sales) and regional/national levels (e.g., boat and sporting good manufacturers). It is also possible that the ACS would decline, with anglers less willing to pay for the opportunity to catch a billfish, unless billfish can be landed in a tournament. Some of these impacts may be offset to some extent by use of a “no-kill” tournament format, a strategy successfully used in many tournaments targeting billfish. Because of these cumulative negative economic impacts, the retention limit was a rejected option in the final FMP amendment.

It is not expected that the prohibition of longbill spearfish will have any negative economic impact, even though this measure did not receive support from the public. The Billfish AP initially backed this precautionary measure, but later withdrew its support, citing lack of scientific evidence for this action. NMFS feels that the unknown status of this stock requires a precautionary management approach. The remaining retention limit final action (status quo on commercial possession) will not impact recreational anglers, but will continue the requirement for all U.S. commercial fisheries to release all billfish, alive or dead, thereby reserving this resource for recreational fisheries within the U.S. EEZ.

The final Atlantic billfish FMP amendment also includes three other rejection options that address allowable levels of recreational retention. All alternatives were rejected for being overly restrictive based on the level of recreational landings, relative to the reductions necessary to achieve rebuilding of overfished stocks. The impact of each of the options would likely result in reduced angler participation, whether private, charters or in association with tournaments, resulting in negative economic impact and ACS. Recreational anglers have voluntarily implemented a conservation ethic, resulting in a release of a vast majority of fish caught (above the minimum size limit), to the point where landing a fish has become nearly unacceptable by the most participants in this fishery. Tournaments targeting Atlantic billfish have either become entirely catch-and-release, or have greatly reduce landings. Most billfish clubs reward members for billfish caught, tagged and released, not for landing a fish. Any further restrictions on the U.S. recreational source of Atlantic billfish mortality would not contribute significantly to rebuilding efforts, and would lead to negative economic repercussions in all phases of this fishery.

Allowable Gear: The draft FMP amendment two gear modifications (allowing hook removal and prohibiting multiple hooks) as precautionary management measures designed to reduce handling mortality. The RIR for the draft FMP amendment anticipated that these precautionary measures would provide positive economic benefit by reducing handling mortality, leading to increases in recreational encounters as stocks rebuild. The final FMP amendment retained the hook removal provision as a final action; however, the multiple hook prohibition was rejected based on the preponderance of public comment that this alternative would not have the intended precautionary impact, while inflicting a negative economic impact on participants in the recreational fishery and support industry. The status quo option was rejected because the goal of the FMP amendment is to maximize the impacts of rebuilding actions, including management measures that enhance the survival of fish following an interaction with commercial or recreational fishing gear.

Bycatch

The HMS FMP will address and restrict bycatch in association with all HMS commercial fisheries, including Atlantic billfish, following precedents set for other fisheries where bycatch associated with a particular gear type is managed by the target species FMP (e.g., juvenile red snapper bycatch was addressed in Amendment 9 of the Gulf of Mexico Shrimp FMP). The final FMP amendment establishes a catch-and-release recreational fishery management program, in recognition of the fact that most recreationally-caught Atlantic billfish are released, including fish above the minimum size limit. The establishment of a catch-and-release fishery management program will not have any negative impacts on expenditures or ACS of the Atlantic billfish recreational fishery.

The economic effects of actions that comprise the components of the Atlantic billfish bycatch reduction strategy, including time-area closures, gear modifications, limited access, and quota reductions, are discussed in the final FMP amendment. One of the major components of this strategy is time-area closures. The draft FMP amendment identified the status quo alternative as a preferred alternative, thereby deferring to the Florida Straits closure included in the draft HMS FMP. Comments on the draft FMP amendment indicated that proposed closures were insufficient to reduce Atlantic billfish bycatch. Similar comments were also received on the draft HMS FMP relative to bycatch of juvenile swordfish. Although the final HMS FMP rejected the Florida Strait closure, NMFS is preparing a proposed rule to encompass a larger and more effective time-area closure. The magnitude of this change to the draft HMS FMP requires an additional comment period and a joint meeting of HMS and Atlantic Billfish Advisory Panels to fully analyze economic and biological impacts of this action before final implementation.

Monitoring, Permitting and Reporting

The final actions selected under monitoring, permitting and reporting, including mandatory logbooks and permits for charterboats, tournament notification requirements, establishment of a June 1 to May 31 fishing year, and development of outreach workshops to reduce post-release

survival will not likely have any adverse short-term effects on either expenditures or the ACS. However, as noted in the RIR for the draft FMP amendment, mandatory at-sea observer coverage on all Atlantic billfish (and HMS) charter/headboat vessels may reduce the number of clientele willing to pay charterboat fees. This conclusion is supported by the large number of public responses to the mandatory observer provision. Comments indicated that observers would impact the number of customers willing to pay the high price of billfish angling, relative to the costs associated with targeting other species (e.g., king mackerel, reeffish, dolphin). Reductions in charterboat activity would subsequently affect associated businesses, including marinas, tackle, and fuel sales. Observer coverage is an important component in fishery management, obtaining information that can not be gleaned from dockside observations; however, NMFS has selected a voluntary observer program in an attempt to minimize the economic impact to the charterboat industry, while maintaining the ability to receive at-sea data. If this voluntary program can not provide statistically reliable sampling frame, a mandatory system may be considered.

The final FMP amendment rejected four other actions related to monitoring, permitting and reporting. Mandatory vessel permits and a landing tag would add to angler costs of operation; administrative burden would also experience a commensurate increase in costs. The 1997 ICCAT recommendation and the rebuilding strategy included in the FMP amendment, as well as ATCA provisions, have enhanced the necessity for accurate monitoring of Atlantic billfish landings. The final actions are an improvement over current programs; however, if these measures are inadequate, a permit and/or a landing tag program would be a valuable addition to the suite of monitoring tools. These measures have been included in the framework provisions of the final FMP (Section 3.11). Reporting from taxidermists would increase their costs and may duplicate other programs. The no action option would not meet ATCA requirements for comparable monitoring, and would violate the 1997 ICCAT recommendation.

Extension of Management Unit and Authority

Extension of the management unit for Atlantic blue and white marlin to the entire Atlantic Ocean, and implementing regulations under both the Magnuson-Stevens Act and ATCA may result in a short-term adverse effect for commercial vessels that may be retaining and selling Atlantic blue or white marlin south of 5°N. This final action will also require recreational anglers on-board U.S.-flagged or foreign vessels fishing in the Atlantic Ocean outside the U.S. EEZ to adhere to potentially stricter regulations than may exist in foreign waters, which may result in reduced participation in these locations. Nevertheless, NMFS believes that to ensure maximum effectiveness of these management and conservation measures, it is crucial that U.S. vessels and citizen comply wherever they fish in the Atlantic Ocean.

The final actions of the Atlantic billfish FMP amendment will work in concert to maximize the effectiveness of the rebuilding program, given the constraints of U.S. Atlantic billfish mortalities relative to Atlantic-wide levels. Increases in minimum size will reduce U.S. recreational landings by 30 to 45 percent, thereby meeting ICCAT-required reductions, as well as decreasing overall mortality levels. The bycatch reduction strategy uses a multi-dimensional approach to reduce overall longline effort, resulting in a concomitant reduction in Atlantic

billfish bycatch and mortality. An expanded time-area closure will further enhance the effectiveness of this bycatch strategy. Several precautionary measures will likely improve post-release survival rates by allowing removal of hooks and through the cooperative outreach program. Prohibiting the retention of longbill spearfish will provide additional protection for this stock until further scientific information is available. Improvement in monitoring will allow NMFS to track Atlantic billfish mortalities to ensure compliance with the 1997 ICCAT recommendation, and follow the progress of the rebuilding program. Extending the management unit for Atlantic blue and white marlin, and implementing regulations under the dual authority of the Magnuson-Stevens Act and ATCA will further improve the effectiveness of the selected final actions. The economic costs of these measures to participants in the Atlantic billfish fishery have been minimized to the extent practicable, while retaining the ability for NMFS to control and monitor all sources of billfish mortalities.

5.5.4 Unavoidable Adverse Impacts

Some of the final actions in the Atlantic billfish FMP amendment may have adverse economic impacts on some fishermen, as discussed in Chapters 3 and 5. However, the final measures were chosen to aid in rebuilding overfished stocks and to prevent overfishing in the future (the overarching goals of the FMP amendment and the Magnuson-Stevens Act), and as such, the adverse economic impacts are unavoidable. Once the stocks are rebuilt they should be both biologically and economically sustainable. In their current condition, the overfished Atlantic billfish stocks are neither.

The final actions minimize the economic impacts in the long-term even though they may have economic impacts in the short-term. Further discussion of minimizing impacts is provided in the FRFA. Without management, Atlantic billfish stocks will remain overfished and would not be rebuilt within the constraints of the Magnuson-Stevens Act. In the absence of additional management measures limiting fishing mortality rates, the stocks could decline to unsustainable levels. The potential adverse biological, social and economic impacts associated with further decline of these stocks will be avoided with implementation of these management measures which are intended to rebuild Atlantic billfish stocks to the Maximum sustainable yield and optimum yield levels.

5.5.5 Irreversible and Irretrievable Commitments of Resources

There are no irreversible or irretrievable commitments of resources associated with the proposed actions. If actions are not taken to reduce fishing mortality and bycatch rates, Atlantic billfish stocks will continue to decline and may become commercially extinct.

5.5.6 Summary of Expected Changes in Net Benefits

A summary of the positive, negative and net economic benefits for each alternative considered in the Atlantic billfish FMP amendment is presented in Table 3². A more complete discussion is provided under each alternative in Chapters 2 through 3 of that document.

Possession Restrictions	Positive Impacts	Negative Impacts	Net Impacts
<i>Size Limits - Final Action</i>			
Set minimum size limits for Atlantic blue marlin at 99 inches LJFL, 66 inches LJFL for white marlin and 63 inches LJFL for west Atlantic sailfish.	- Increased recreational satisfaction and increase in revenue in long-term due to stock rebuilding.	- In short term, the reductions in marlin and sailfish retention associated with increased size-limits may cause some decrease in the number of recreational fishermen.	- Possible increase in net benefits and recreational satisfaction in the long-term with more availability of targeted species.
<i>Size Limits - Rejected Options</i>			
No Action Maintain current size limits - blue marlin (86 inches), white marlin (63 inches), and sailfish (57 inches).	- Possible increase in recreational satisfaction and revenue due to reducing size limits from interim rule making more fish available for landing.	- Reduced revenue and satisfaction in long-term due to lack of availability of over-fished stocks.	- Probable reduction in net benefits in the long-term due to reduced encounters with over-fished stocks.
Slot limits (minimum and maximum sizes) to protect juveniles and large spawning females.	- Similar impacts noted for Final Action; the overall result is similar in reducing number of fish being landed.	- Disallowing larger sizes may have negative impact on billfish tournament participation. - Variable size limits may increase confusion by recreational fishermen, reducing satisfaction.	- The long-term impact on net benefits may be positive with increased stock size.
<i>Retention Limits - Final Actions</i>			
Prohibit retention of longbill spearfish.	- Probable long-term increase in longbill spearfish populations.	- Not likely to negatively impact recreational or commercial fisheries since this species is not targeted.	- Possible increase in recreational catches of fish as population increases.

²Rejected options designated with an asterisk (*) were designated as preferred management measures in the draft Atlantic billfish FMP amendment.

No Action - maintain current prohibitions.	- Commercial fishermen are currently not allowed to sell, barter, trade or possesses onboard commercial vessels.	- Long-term continued reductions in overfished stocks may reduce revenues for charterboat and businesses associated with recreational billfish angling, requiring maintenance and extension of current prohibitions. - Gross revenues for commercial vessels will continue to be impacted by requiring discarding of all billfish.	- Possible negative net benefits in long-term if current prohibitions are not maintained and extended.
<i>Retention Limits - Rejected Options</i>			
*Establish a bag limit of 1 billfish/vessel/day, with authority to adjust, including to zero.	- Possible long-term increase in recreational revenue and satisfaction as stocks rebuild with reduction in fishing-related mortalities. However, recreational landings are a very small component of total Atlantic landings, limiting the effectiveness of this action.	- Short-term may result in reduced recreational participation due to dissatisfaction with management practices, particularly if landing limits are reached and a zero bag limit is implemented until the next fishing year.	- Possible increase in net benefits and recreational satisfaction in the long-term.
Prohibit retention of Atlantic billfish onboard a recreational vessel.	- Long-term rebuilding of overfished stocks may result in enhanced recreational satisfaction and revenues.	- May reduce short-term and long-term revenues for recreational fisheries targeting billfish, including charters, tournaments and associated industries.	- Possible long-term increase in recreational revenue and satisfaction in increased encounters with target species; possible reduction in short term revenues.
Allow landing of Atlantic blue marlin and Atlantic white marlin only during fishing tournaments and from charterboat.	- Possible long-term increase in recreational revenue and satisfaction as stocks rebuild with reduction in fishing-related mortalities.	- May result in short-term reduced recreational effort due to dissatisfaction with management practices, particularly for anglers fishing from private vessels that do not participate in billfish tournaments.	- Possible increase in net benefits and recreational satisfaction in the long-term for anglers on charterboats or fishing in tournaments. - Private anglers may be adversely affected by not allowing marlin landings (although can land sailfish).

Allow only catch-and-release format for all Atlantic billfish tournaments.	- Long-term rebuilding of overfished stocks may result in enhanced recreational satisfaction and revenues.	- Short-term negative economic impact on tournaments that require landings, by reducing the number of participants. Also may reduce financial impact of tournaments on local economy.	- Possible long-term increase in recreational revenue and satisfaction with increased hookup rates associated with increased population size if alternative means are found to conduct tournaments. - Possible short-term negative economic impacts.
<i>Authorized Gear - Final Action</i>			
Allow removal of hook from recreational and commercially caught fish.	- Possible long-term benefit by reducing release mortality, resulting in increased stock abundance; and - Increase in business for dehooking devices.	- Unknown	- Increase in long-term revenue and recreational satisfaction associated with increased targeted species abundance.
<i>Authorized Gear - Rejected Options</i>			
*Prohibit use of multiple hooks per bait by HMS fishers.	- As part of a long-term strategy to rebuild overfished stocks, possible increase in recreational fishing revenue.	- Short-term may result in reduced recreational participation due to dissatisfaction with management practices. Also requires purchase of new tackle.	- Possible increase in net benefits and recreational satisfaction in the long-term.
No Action	- No impact on stock rebuilding	- Unknown	- Possible negative net benefits in the long-term through impacts on limited contribution to rebuilding efforts.
Prohibit the possession and use of any hook but a circle hook in Atlantic billfish recreational fisheries.	- Reduction in post-release mortality rates associated with circle hooks will enhance rebuilding efforts leading to long-term recreational satisfaction and revenue.	- If circle hooks result in reduced frequency of hook-up rates, may result in short-term frustration and dissatisfaction by recreational anglers. - Anglers will be required to purchase new hooks and remove other hooks from vessel, impacting ability to fish for other recreational species.	- Further research is needed on the economic impacts associated with mandatory use of circle hooks in the recreational billfish fishery to evaluate the net benefits of this alternative.

Bycatch - Final Actions	Positive Impacts	Negative Impacts	Net Impacts
Establish a catch-and-release fishery management program.	- Billfish anglers will likely support a management measure that recognizes their historical, voluntary efforts to reduce billfish mortality.	- Unknown	- As billfish stocks rebuild, recreational encounter should increase, resulting in increased recreational satisfaction and long-term net benefits.
Establish Atlantic Billfish Bycatch Reduction Strategy consisting of management tools included in the HMS FMP.	- Possible long-term increase in recreational revenue and satisfaction due to an increase in catches of target species; and - Uniform management strategy with HMS may reduce management and enforcement costs.	- Reduction in revenue for commercial vessels impacted by closed areas, particularly if size of vessel prohibits or limits ability to move to alternative fishing areas.	- Probable long-term increase in net benefits to recreational fishery by rebuilding of overfished stocks. - Possible negative impact on components of commercial fishery unable to sustain effort due to impact of time-area closures.

Monitoring, Permitting and Reporting - Final Actions	Positive Impacts	Negative Impacts	Net Impacts
Require vessel permits for charterboats targeting HMS, including Atlantic billfish. Logbooks will be required for selected charterboats.	- Enhances monitoring and improves data collection, toward prevention of exceeding allowable landing levels that would impact rebuilding efforts.	- Cost of permit is estimated to be \$25 to \$50 per vessel and the logbook may take 15 to 30 minutes to complete for each trip. May result in reduced participation by some charterboats. - Will likely increase the cost of management and enforcement.	- Monitoring is needed to prevent continued overfishing, which may lead to long-term reductions in recreational revenue and satisfaction. Therefore, this alternative provides an overall net benefit to the billfish resource, and to the user groups.
Establish a voluntary observer program for charterboats targeting HMS, including Atlantic billfish.	- Would provide verification of logbook information.	- Unknown under a voluntary program.	- Improved monitoring is a critical component of the rebuilding plan, which will lead to long-term increases in net benefits associated with higher billfish encounter rates. A mandatory system may be implemented if statistically-valid samples can not be obtained.
Implement tournament notification requirements.	- Monitoring of billfish landings will be facilitated by defining the entire billfish tournament universe along the Atlantic coast, enhancing integrity of the landings database. The 4 week prior notification requirement implemented as an interim measure has already improved the NMFS database.	- There have been no reported negative impacts with the interim measure requiring 4 week prior notification; minor costs could be associated if tournaments are selected for further reporting.	- A complete database of all active tournaments will provide a platform to determine billfish mortality levels associated with tournaments (landings and dead discards). This information is needed to ensure compliance with rebuilding schedules to enhance long-term net benefits.
Institute a June 1 to May 31 fishing year for Atlantic billfish landings.	- No impacts are expected as a result of implementation of this action.	- No negative impacts are expected as a result of implementation of this alternative.	- This alternative will provide a mechanism to comply with any ICCAT recommendations directed toward billfish management on a timely manner, as required by ATCA.

Outreach Programs for commercial and recreational fishermen on the methods and benefits of releasing billfish alive.	- Outreach programs will enhance the abilities of fishermen to properly handle, measure, tag and release billfish. The resultant decrease in post-release survival rates will enhance rebuilding efforts, leading to long-term increases in net benefits.	- Participation in programs would be encouraged, but attendance would not be mandatory, limiting the effectiveness of this alternative - Outreach materials will increase management costs, although cost-sharing collaborations may mitigate impact.	- Long-term increase in net benefits expected as increased post-release survival rates enhance rebuilding efforts, resulting in expanding of billfish stocks.
<i>Monitoring, Permitting, and Reporting - Rejected Options</i>			
*Require observers onboard charterboats, if selected.	- Would provide verification of logbook information submitted from implementation of Preferred Alternative 1.	- Would impact revenue if the number of customers is reduced to provide room to carry an observers or customers refuse to participate in a charter with a federal observer on board.	- Improved monitoring is a critical component for improved management, but based on comments on the proposed mandatory program, there is a potential for negative economic impacts to the charterboat industry.
Require vessel permits for all recreational vessels targeting Atlantic HMS.	- Enhances monitoring and improves data collection by impacting entire HMS recreational community.	- Cost of permit is estimated to be \$18 to \$25 per vessel which may result in reduced participation by recreational fishermen; - Will likely increase the cost of management and enforcement.	- Because the total number of HMS recreational vessels is unknown, the net impact of this alternative can not be quantified.
Require a tag be affixed to all recreationally-landed billfish.	- Enhances monitoring and improves data collection.	- Cost of landing tag is estimated to be \$20 to \$30, - Will likely increase the cost of management and enforcement.	- Monitoring of billfish landings could prevent continued overfishing leading to long-term increases in recreational revenue, satisfaction, and net benefits.
Require taxidermists to report all mounts of Atlantic billfish.	Enhances monitoring and improves data collection.	- Taxidermists will experience and increase in reporting burden. - Will likely increase the cost of management and enforcement.	- This monitoring alternative will likely overlap other methods being employed.

No Action	No increase in cost or public burden.	No long-term measure of status of the recreational fishery and stock rebuilding, that may result in more restrictive management measures reducing recreational satisfaction and resultant revenues.	Inadequate monitoring may lead to continued overfishing, further reducing overfished stocks leading to long-term reductions in recreational revenue and satisfaction.
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Extension of the Management Unit and Management Authority	Positive Impacts	Negative Impacts	Net Impacts
Extend management unit for Atlantic blue and white marlin to entire Atlantic Ocean and implement regulatory actions for all Atlantic billfish under both Magnuson-Stevens Act and ATCA.	Long-term rebuilding of overfished stocks may result in enhanced recreational satisfaction and revenues.	- May result in reduced U.S. recreational participation in foreign fishing locations (e.g., Bahamas) if U.S. vessels must adhere to more restrictive regulations.	Consistent management measures for U.S. vessels operating throughout range of stocks will likely enhance rebuilding of overfished stocks, resulting in long-term increases in net benefit and recreational satisfaction.
<i>Rejected Options</i>			
Alternative 2: No Action	Maintains revenue in the short-term.	Continued over-fishing in the long-term may reduce recreational angler satisfaction and associated revenue.	Possible negative net benefits in long-term.

5.6 Final Regulatory Flexibility Analysis

This section presents NMFS' FRFA for the final Atlantic billfish FMP amendment. Completion of the FRFA is required by the RFA, unless the agency can certify that the action will not have a significant economic impact on a substantial number of small entities. The October 9, 1998, draft FMP amendment did not include an IRFA, based on the conclusion that there was not likely to be a significant impact on a substantial number of small entities. As previously discussed, NMFS was not aware at the time the NOA was published of any possible negative impacts on billfish tournaments, including cancellation, for a *potential* zero bag limit until comments were received in response to the September 29, 1998, interim rule measure. Consequently, on January 20, 1999, NMFS released an amended RIR and IRFA to examine alternative mechanisms to reduce the economic impacts associated with compliance with ICCAT-recommended catch levels. During the public comment period for the proposed rule implementing the draft HMS FMP and Atlantic billfish FMP amendment (January 20, 1999; 64 FR 3154), which ended March 12, 1999, NMFS received thousands of verbal (at 27 public hearings) and written comments. Many responses provided further support of the negative economic impacts on tournaments of an adjustable retention limit, while other comments also indicated that the mandatory observer program and the multiple hook provision may also have a negative economic impact on the components of the Atlantic billfish fishery. The FRFA summarizes these comments, and describes measures taken in the final FMP amendment to minimize the impact of these measures, while achieving the overarching objectives of the FMP amendment to rebuild overfished Atlantic billfish stocks, and implement a precautionary management strategy for these species.

5.6.1 Description of the Compliance and Reporting Requirements

The final actions included in the Atlantic billfish FMP amendment do not significantly change the compliance and reporting regulations for Atlantic billfish tournaments, commercial logbooks, or for tracking Pacific billfish sales through the Certificate of Eligibility. The FMP amendment proposes a new minimum size for Atlantic blue marlin, Atlantic white marlin, and west Atlantic sailfish, and prohibits the retention of Atlantic longbill spearfish. The final FMP amendment also contains a mandatory HMS (including Atlantic billfish) charterboat permit and logbook, as well as a voluntary observer system for charterboat operators that target HMS. A registration requirement for Atlantic billfish and HMS fishing tournaments is also included a part of the mechanisms utilized in the FMP amendment to improve monitoring of the recreational fishery. NMFS believes that the majority of fishermen involved in Atlantic billfish fisheries will have little difficulty complying with the changes in permitting and reporting as most of the requirements will not add to the cost of fishing or change the revenue from fishing. The final actions under monitoring, permitting and reporting are found in Section 3.8.

5.6.2 Summary of Comments from the IRFA

NMFS received many responses during the public comment period on draft FMP amendment and IRFA relative to the one Atlantic billfish per vessel per day retention limit, including the provision that provides the AA the authority to adjust the retention limit, including to zero, with three days notice. Comments further support the negative economic impact that this measure would have on tournaments and associated businesses, noting that tournaments would be canceled, or at least experience significant reduction in participation, solely on the *possibility* of a prohibition of landing any fish. Tournament operators commented that planning events takes many months, including solicitation of sponsors and local support (hotels, restaurants, Chamber of Commerce, marinas, tackle, etc.), printing and distributing advertisements to attract anglers to participate in the event, and other long-range planning activities. A three-day notice prohibiting the retention of an Atlantic billfish would significantly impact the ability of the tournament to fulfill their obligations. In fact, a billfish tournament in Panama City, FL commented that it has changed to all-release format for 1999 as a direct result of the uncertainty associated with the proposed regulatory measure. They also noted that loss of sponsors and participants is a likely result of this change, impacting their ability to donate funds to local charities as they have done in the past.

The objective of the adjustable retention limit, including a zero limit, was to ensure compliance with the 1997 ICCAT recommendation requiring the United States and other members to reduce landings of Atlantic blue and white marlin by at least 25 percent. The zero retention limit would only be invoked if, based on the best available science, the Atlantic blue marlin or Atlantic white marlin landing caps were exceeded. However, anglers have stated a clear preference that NMFS utilize size limits as a means to control landings. The responses received by NMFS indicates that most anglers do not land any billfish, particularly outside a tournament, but would like to have the opportunity to land “the fish of a lifetime,” on the rare chance that a very large billfish is encountered. Tournament participants also indicated that a larger minimum size would not dissuade them from fishing, whereas a zero retention limit, which eliminates the possibility of landing an unusually large fish, would reduce tournament participation. During 1998, two interim rule measures were implemented, raising the minimum size of Atlantic blue and white marlin in the U.S. EEZ. The goal of the interim rules was to immediately reduce landings in accordance with ATCA. Based on preliminary information (Section 3.4) and the cooperation of the recreational billfish angling community, these rules have apparently been effective in achieving that goal.

The mandatory observer program and the prohibition of multiple hooks also resulted in a number of comments relative to their economic impact on the Atlantic billfish recreational fishery. Although these two management measures were not addressed in the IRFA, a summary of comments on these issues is provided, along with a discussion of how the final FMP has minimized the economic impact of these actions. The multiple hook prohibition was included in the draft FMP amendment as a precautionary measure to reduce handling mortality. NMFS received comments voicing concern over the effectiveness of this measure to meet its intended objective to avoid physical damage to eyes, gills or throat tissue. Recreational anglers indicated

that double hooks rarely cause damage to the hooked fish, and requiring a single hook will significantly reduce hook-up rates. Anglers would also be required to purchase new tackle and discard expensive multiple hook rigs. Billfish tackle manufacturers would also be impacted by re-tooling lures for single hook lures for use in Atlantic-based billfish fishing.

NMFS received many comments on the mandatory observer charter/headboat preferred management alternative included in both the draft FMP amendment and HMS FMP. Among the issues addressed in these comments was the negative economic impact that this requirement would have on the charterboat industry. Atlantic billfish anglers paying for a charterboat trip may be unwilling to select a charterboat that is assigned to carry a federal observer. Since many charterboat trips are booked months ahead of time, it is unlikely that the customers would know if the charterboat they have chosen will be carrying an observer, leading to last-minute cancellations that would have to be absorbed by the charterboat owner and crew. It is apparent that a mandatory observer program could economically disadvantage charterboats that are selected by NMFS.

5.6.3 Description of Small Entities to which the Final Actions May Apply

A “small entity” includes small businesses, small organizations, and small governmental jurisdictions. The SBA considers a small business in the commercial fishing industry as a firm with annual receipts averaging over three years up to three million dollars annually. For processors, a small business is one with 500 or fewer employees; the wholesale industry size standard is 100 or fewer employees. A small organization is defined as any non-profit enterprise that is independently owned and operated and is not dominant in its field. NMFS believes that all participants in HMS fisheries, including billfish tournament operators, can be defined as a small entity.

Unlike commercial HMS fisheries that are required to obtain permits that can be used by NMFS as a basis for determining the impacted entities (i.e., shark, swordfish and tuna permit holders), there is no direct system for identifying the entities impacted by regulatory actions on Atlantic billfish in terms of individual angler participants, tournaments, or number of private and/or charterboats. Many of these data deficiencies are being addressed in final management actions in the FMP amendment, including requiring all tournaments involving billfish to notify NMFS four weeks prior to commencement, and institution of logbooks and permits for charter/headboat vessels. The framework provisions of the draft FMP amendment also provide for the development of other monitoring and tracking programs (e.g., landing tags).

In the United States, Atlantic blue marlin, Atlantic white marlin, west Atlantic sailfish and longbill spearfish can be landed only by recreational fishermen fishing from either private or charterboats. Recreational angling for Atlantic billfish can be further sub-divided into tournament and non-tournament trips. The total population of billfish anglers has not been quantified; available estimates are based on expansion techniques of recreational fishing databases. Fisher and Ditton (1992) estimated that there were 7,915 U.S. tournament billfish anglers in the west Atlantic Ocean during 1989, making a total of 102,895 billfish fishing trips (90 percent

confidence interval = 6,512), including tournament and non-tournament participation. More recently, Ditton and Stoll (1998) reported in summarizing an analysis by the American Sportfishing Association of the 1991 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, that 230,000 anglers in the United States spent 2,136,899 days fishing for various billfish species. They noted that the ten states with the highest number of billfish anglers were: 1. Florida (159,575); 2. California (31,162); 3. North Carolina (30,071); 4. Hawaii (26,588); 5. Texas (23,714); 6. New Jersey (17,687); 7. New York (12,671); 8. South Carolina; 9. Maryland (9,959); and 10. Delaware (8,666).

Fisher and Ditton also reported that anglers make an average of 13 billfish trips per year. The number of trips over the survey year varied by region, with the highest number taken in the Caribbean (17.3 per year), and the fewest in the Gulf of Mexico (8.7 trips per year). A total of 71 percent of the 1,171 anglers responding in the Fisher and Ditton study indicated that they did not keep a billfish during the year of the survey, therefore any impacts that reduce landings to zero would affect approximately 29 percent of billfish anglers (i.e., the percentage of anglers from Fisher and Ditton's study that reported keeping a billfish that was caught). The retention rates per angler also vary in different parts of the United States. During the 1989 fishing season, anglers in the Caribbean retained 26 percent of billfish caught, in the Gulf of Mexico 19 percent were kept, in the mid-Atlantic region 5 percent were retained, while along the south Atlantic coast of the United States a total of 9 percent of billfish were kept. Therefore, the impact of a potential zero bag limit would be greatest on anglers in the Caribbean and in the Gulf of Mexico.

Public comments received in regards to the zero retention limit provision indicate that the mere potential of this occurrence could result in cancellation of tournaments. It is important to distinguish between various types of billfish tournaments. There are approximately 300-400 billfish tournaments per year along the U.S. Atlantic coast (including the Gulf of Mexico and Caribbean) divided among three different organizational levels, each with potentially different impacts resulting from a possible zero bag limit. The first type level are the high profile billfish tournaments. As discussed in Chapter 2 of the final FMP amendment, these tournaments are characterized by large number of vessels and big cash prizes in excess of several hundred thousand dollars. Examples of the magnitude of prize levels include the Pirate Cove Billfish Tournament (August 1997) where a 670 pound blue marlin entry won a \$217,000; in the Big Rock Blue Marlin Tournament five blue marlin between 487 to 646 pounds won \$665,000, and in the 1998 White Marlin Open, a 79.5 pound white marlin won \$540,000. These tournaments generally require a fish to be landed to qualify for a cash prize; however, the minimum size limit for these tournaments are generally larger than those required by federal regulations. The high profile tournaments also often involve calcuttas, which are prizes based on pooled contributions of a group of tournament participants that are won by the member of the group that catches and/or releases the largest/most fish. High profile tournaments are also a popular tourist attraction, which provides additional economic benefits for the local community holding the tournament. These events require extensive planning, coordination and significant expenditures several months prior to the tournament to ensure successful operation of the event. The high profile tournaments are therefore the mostly likely tournaments to consider cancellation of an

event based on the potential threat of a zero bag limit, particularly if given only a three-day notice.

The next level of tournament organization is the club series tournaments which are sponsored by various types of fishing clubs and usually award trophies. The club series tournaments can also require landings of fish to qualify for prizes, but generally have moved toward an all-release strategy, and therefore would be less likely to be impacted by the threat of a zero bag limit. The third organizational level includes rodeo and promotional tournaments which are usually sponsored by a commercial concern such as a restaurant, Chamber of Commerce, group of charterboat captains or marinas. These tournaments generally include a large variety of species beside billfish which would minimize the likelihood that a rodeo would cancel based on the possibility of a zero billfish bag limit.

The 1988 Atlantic Billfish FMP included a “no-kill” tournament alternative in the management options considered. Although it was ultimately rejected as being too burdensome at the time, the SAFMC strongly recommended that all tournaments adopt the no-kill format. Subsequently, many tournaments have adopted strategies to reduce or eliminate landings as prerequisite for qualifying for tournament prizes. Tournaments that are designated as “no-kill” award prizes based on number of billfish that are tagged and released. However, billfish are still landed during other billfish tournaments. The successful conversion of tournaments that currently require landings to qualify for prizes to a “no-kill” tournament format will depend on continued development and evaluation of alternative means to verify angler success in catching a billfish (number and size of fish). These mechanisms may include remote video technology or on-board observers.

If tournaments are canceled or experience reduced participation, there are support business that could subsequently be negatively effected. On a local community level, these businesses could include hotels, restaurants, charters, bait and tackle suppliers, and taxidermists. On a wider scale, it is possible that boat, gear and tackle manufacturers could experience losses in sales. However, a measure of the extent of these effects is difficult to estimate in terms of lost revenues, or reductions in the willingness of billfish anglers to expend funds beyond the direct costs of the fishing experience.

5.6.4 Minimizing Impacts to Small Entities

The final FMP amendment recognizes that imposing an adjustable retention limits for billfish would be excessive and unnecessary regulation of this recreational fishery, and the proposed measure imposes an economic uncertainty in the billfish fishery. NMFS has determined that U.S. recreational angler landings can effectively be regulated through size limits, ensuring compliance with ICCAT landing limits for Atlantic blue marlin and white marlin. Any additional reductions in landings can be achieved by further increases in the minimum size limit. Further, if appropriate, NMFS may promulgate an emergency rule to prohibit retention of blue and white marlin. Since NS7 requires that conservation and management measures should avoid unnecessary duplication, additional measures to control Atlantic billfish mortalities from the

recreational sector are not necessary at this time. The one Atlantic billfish per vessel per trip retention limit and provision providing the AA the authority to adjust the retention limits, including a zero bag limit, therefore, are rejected management measures in the final Atlantic billfish FMP amendment.

The prohibition of multiple hooks has similarly been rejected in the final FMP amendment. However, because of its potential value as a precautionary measure to reduce handling mortality, use of single-hook rigs, as well as other gear modifications (e.g., circle hooks) will be included in NMFS outreach programs. NMFS has also eliminated the mandatory requirement for observers, opting for a voluntary system. NMFS received many comments from charterboat captains and private anglers that a voluntary observer program would be embraced by the recreational billfish community. Observers are a necessary component of fishery management to determine the accuracy of logbooks, and more importantly allow NMFS to directly observe recreational catch compositions, hook-up and release rates, handling and release techniques, and species and size compositions that can be used to enhance stock assessments. The voluntary observer program should eliminate negative economic impacts, but if statistically meaningful sample design can not be obtained, a mandatory program may be considered at a later time.

5.6.5 Conclusions

The final FMP amendment has minimized the economic impact of the final actions by eliminating recreational retention limits and prohibitions on the use of multiple hook lures or baits, and establishing a voluntary observer program. However, the final FMP amendment has retained its ability to effectively accomplish the over-arching goals of establishing a domestic and international foundation for rebuilding overfished stocks, as well as minimize Atlantic billfish bycatch and bycatch mortality through management tools available in the HMS FMP (including assessment of the economic impacts of these actions), and enhance monitoring of the recreational billfish fishery, as required by the Magnuson-Stevens Act and ATCA.

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